CLAIMS

1. A method for determining the complex impedance $Z(f_m)$ of a non-stationary electrochemical system, characterized in that it comprises the steps of:

setting the system to a selected voltage state and applying a sinusoidal signal of frequency f_m thereto,

measuring, immediately after, successive values of the voltage and of the current at regular time intervals ΔT,

calculating the discrete Fourier transforms of the voltage (E(f)) and of the current (I(f)), the voltage transform being calculated for the sole frequency f_m of the sinusoidal signal and the current transform being calculated for frequency f_m and for two adjacent frequencies f_{m-1} and f_{m+1} on either side of frequency f_m, and

calculating the impedance according to the following formula:

$$Z(f_m)=E(f_m)/I^*(f_m)$$

where I* designates a corrected current such that:

$$Re[I^*(f_m)] = Re[I(f_m)] - \{Re[I(f_{m+1})]+Re[I(f_{m-1})]\}/2$$

$$Im[I^*(f_m)] = Im[I(f_m)] - \{Im[I(f_{m+1})]+Im[I(f_{m-1})]\}/2.$$

2. The method of claim 1, characterized in that it is repeated for a succession of excitation frequencies.